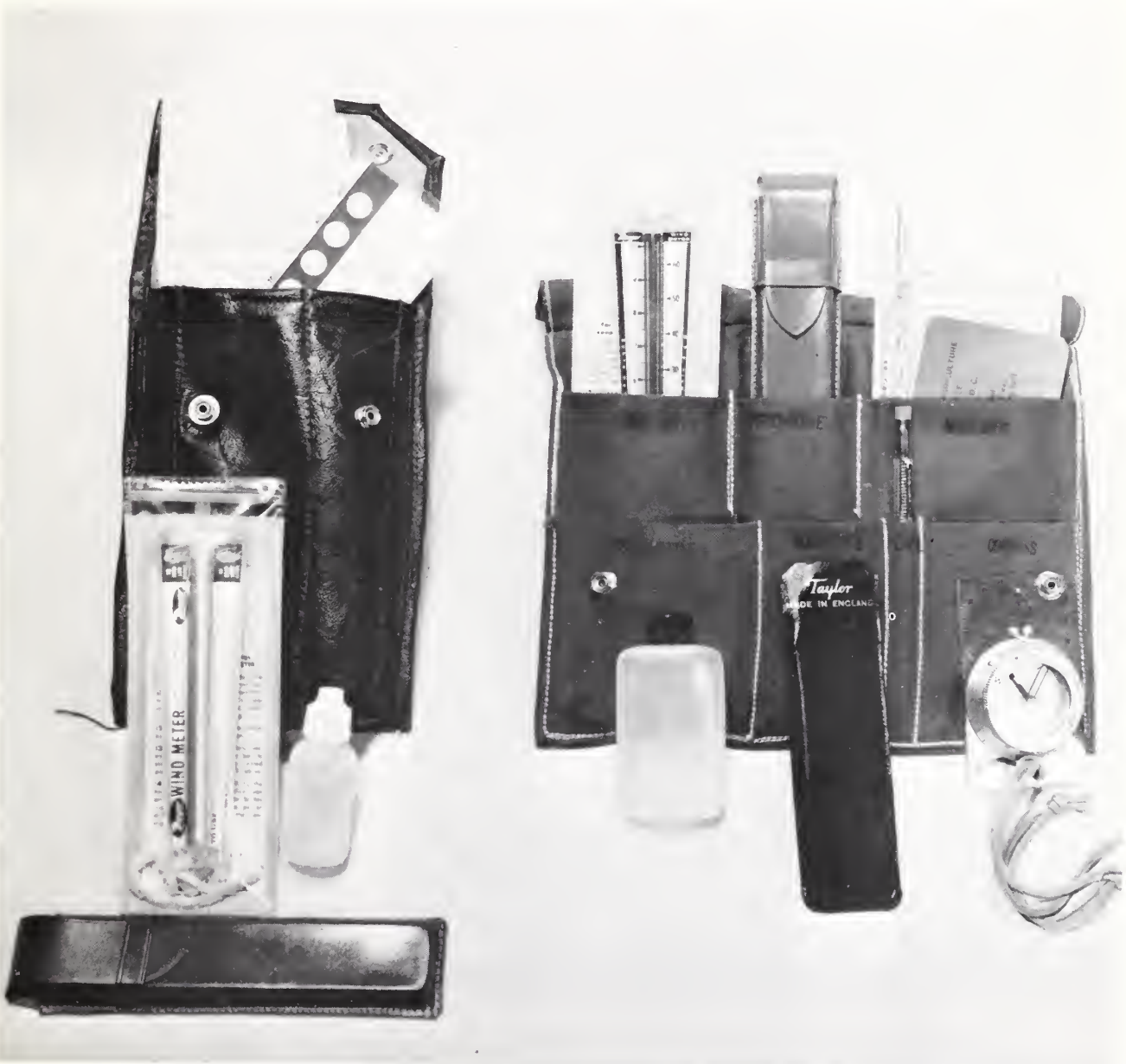
FIRE MANAGEMENT NOTES

SPRING 1979, Volume 40, Number 2

U.S. DEPARTMENT OF AGRICULTURE • FOREST SERVICE



FIRE MANAGEMENT NOTES

An international quarterly periodical devoted to forest fire management

Table of Contents

The Cover

Current on site weather information is essential for safe and effective wildland fire suppression. Mobile fire weather units are now being used in remote areas and are aided by basic weather information gathering tools. Our lead article discusses the use of these units in remote areas.

FIRE MANAGEMENT NOTES is issued by the Forest Service of the United States Department of Agriculture, Washington, D.C. The Secretary of Agriculture has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through September 30, 1979.

Single copy cost is $1.25 domestic and $1.60 foreign.

Subscriptions may be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The subscription rate is $5.00 per year domestic or $6.25 per year foreign. Postage stamps cannot be accepted in payment.

Fire Weather Meteorological Support Units

Clyde A. O'Dell and Lyle C. Hammer

Providing field fire weather meteorological support in remote areas has been a vital concern of fire management for many years.

History

Mobile fire weather support units have been available in the Western United States for about 25 years. The first unit, a radio-equipped panel truck, was used in the early 1950's. Later units consist of truck-mounted campers, equipped with two-way radios and recorders for receiving weather service forecast charts.

The campers are used regularly on wildland fires. However, they cannot fill the needs of wildfire suppression forces in remote areas of Alaska or in the Eastern United States where requirements for their use is intermittent and/or access is difficult.

The first effort to solve this problem was undertaken in 1963 by the Forest Service. This first crude air-portable unit consisted of a tent, table and chair, two-way radio, and miscellaneous equipment. It was first used on a fire in the Idaho Wilderness Area in 1966.

Lyle C. Hammer is a Fire Weather Meteorologist at Weather Service Forecast Office, Boise Interagency Fire Center, Boise, Idaho.

Clyde A. O'Dell is the National Weather Service Staff Meteorologist for the Boise Interagency Fire Center, Boise, Idaho.

Air-Portable Units

A new air-portable mobile unit is now available that is capable of providing field meteorological service throughout the continental United States, Alaska, or Hawaii. Wildland managers are finding an increasing need for meteorological services, and these units are designed to provide that additional support.

Concept

The concept for a single unit, air-portable weather forecasting station was developed by National Weather Service Fire Weather Staff at the Boise Interagency Fire Center (BIFC). The following criteria were established for developing the units:

- Each unit be complete in itself with all components in one package;
- the units be easily transported to any point in the United States, including Alaska and Hawaii, by surface vehicle, aircraft, or helicopter; and
- a meteorologist, trained in the field operation of the air-portable, must accompany the unit.

Figure 1.—Prototype Air Portable Fire Weather Forecasting Unit.

Prototype

A prototype unit was designed jointly by the Bureau of Land Management and the National Weather Service at BIFC. Construction began in late 1975. The prototype unit (fig. 1), fully equipped, can be towed on the highway, hauled on a 1-ton truck, flown slung under a helicopter, or transported in a cargo plane.

The prototype is designed to fold into a box that will fit into the cargo doors of the United States Department of Agriculture Forest Service DC-3 aircraft. The wheels retract by a mechanical crank, and the tongue folds up. Fully retracted, the unit measures 6 feet wide, 6.35 feet long, and 3.7 feet high. When the unit was slung under a helicopter (Bell 212), it weighed 1,860 pounds and was successfully flown at air speeds up to 70 knots. It can be air lifted by a Bell 205, 212, or equivalent helicopter. Service ceiling is estimated at about 8,000 to 8,500 feet on a warm afternoon.

The air-portable prototype can only be used in the Western United States where radio broadcasting facilities already exist at some Weather Service Forecast Offices. The unit has been successfully used on several fires in northern California.

Figure 3.—Air Portable Being Air Lifted by Bell 212.

Second Generation

The second generation air-portable system consists of two units (fig. 2); one is a field unit for use at the fire site, the other a base unit. The base unit transmits the necessary data from an appropriate Weather Service Office to the field unit.

Figure 2.—Second Generation Units—Base and Field.

Bethany camp trailers were chosen for the second generation air-portables. Very little modification was needed to make them air portable. Financing for the second generation was shared by the Bureau of Land Management, the Forest Service, and the National Weather Service.

The base station, with its own 120-volt, 60-cycle power supply, has a 200-foot umbilical cord. This cord makes it possible to set up the base unit on a roof top or in a parking lot within 200 feet of the Weather Service Office. Remote radio equipment makes it possible to operate the base unit away from the Weather Service Office.

The field station is similar to the base station. It is equipped with a single-side band radio and a facsimile recorder. Electric power is furnished by a 120-volt, 60-cycle generator.

Each air-portable unit is equipped with a helicopter sling and packing boxes for permanent storage of the

Continued on next page

from page 3

electronic gear during standby and transportation of the unit.

The second generation air-portable units have been air lifted by the Bell 212 helicopter (fig. 3). Each camper unit weighs about 1,700 pounds. Service ceiling with these units is also estimated at about 8,000 to 8,500 feet on a warm afternoon.

Transportation of the commercial tent campers by air cargo planes is limited. The Bethany camper units measure 6.25 feet wide, 3.6 feet high, and 14.2 feet long.

Application

The capabilities of this new equipment make it applicable for mobile meteorological support in the Eastern United States, Alaska, and Hawaii. These units can also be used for wildland management meteorological support in activities such as aerial spraying and prescribed burning. Their use need not be limited to meeting wildland management needs, but also may serve as emergency Weather Service Offices in the event of an oil spill, a major storm, flood, hurricane, tornado, or other natural disaster.

A second pair of air-portables, fully financed by the National Weather Service, is currently under construction and will be assigned in the Eastern United States during 1979.

Water Gel Explosives For Building Fireline

Water gel explosives offer a safe, low-cost alternative to machine or hand-built fireline on prescribed burns. Water gel explosives are somewhat different than the dry system developed for wildfire use, but their line clearing effectiveness is nearly identical.

Water gel explosives offer several advantages in line building. Brush and other debris are scattered rather than piled next to the line. The soil in the line is loosened and easy to dig for hotspotting and mopup. A layer of soil covers the fuels close to the line, acting as a retardant.

Water gels are safe, stable explosives developed in the mining industry for blasting under wet conditions. For fireline building, the water gel is packed in 100-foot-long tubes (30.48 m), each weighing about 50 pounds (22.7 kg). The explosive is ammonium nitrate with a sensitizer added so it will detonate in small diameter charges. Although much less sensitive than dynamite or many other explosives, water gels are Class A explosives and must be stored and handled accordingly.

The United States Department of Agriculture Forest Service's Equipment Development Center (MEDC) at Missoula, Mont., has conducted successful field tests and demonstrations of the water gel system in several Western States over the past 3 years. These tests are discussed in an MEDC project record, Water Gel Explosives for Building Fireline (7851 2203), June 1978. Based on the success of these tests, Ireco Chemicals, Salt Lake City, Utah, and Dupont Explosives, Wilmington, Del., have designed and packaged water gel explosives for operational fireline building.

Field testing has suggested other jobs for the water gel explosive, including brushing out P-lines (preliminary survey routes) on road surveys, creating big game access trails in large brush construction.

A No. 6 blasting cap will detonate water gel explosives, but MEDC recommends the Reynolds Industries Exploding Bridgewire (EBW) firing system because of its increased safety. EBW detonators, approved for USDA Forest Service use in 1974, are more expensive than standard caps but contain no primary explosive and are much safer and easier to handle and store. The complete EBW system includes detonator and control unit and firing module.

Water gel line-building explosives have not been tested for their fire starting potential, so caution should be used when fine fuel moistures are extremely low. Manufacturers recommend that water gels not be stored for longer than 1 year, although some USDA Forest Service units have used 3-year-old explosives successfully. The material also becomes less sensitive to detonation below 40° F (4.4° C) and will not detonate below freezing.

Cost estimates for building fireline by hand on prescribed burns range as high as $3.50 per foot ($11.48 per meter), while the cost of water gels is less than 25 cents a foot (82 cents a meter). Although deployment and touchup costs must be considered, this explosive system is a cost-effective tool that can make a positive contribution to better fuels management.

Bilingual Smokey

An effective fire prevention program must reach as many forest and wildland users as possible. In most parts of the United States this communication effort has consistently been in the English language. The U.S. Department of Agriculture, Forest Service's Angeles National Forest in California has developed a bilingual program in an effort to reach the local Spanish-speaking population with fire prevention messages. The next two pages give some examples of the program activities.

A bilingual Smokey Bear as a talk-show guest on KMEX-TV, an all-Spanish station which covers the Los Angeles basin.

EVITE INCENDIOS
FORESTALES!

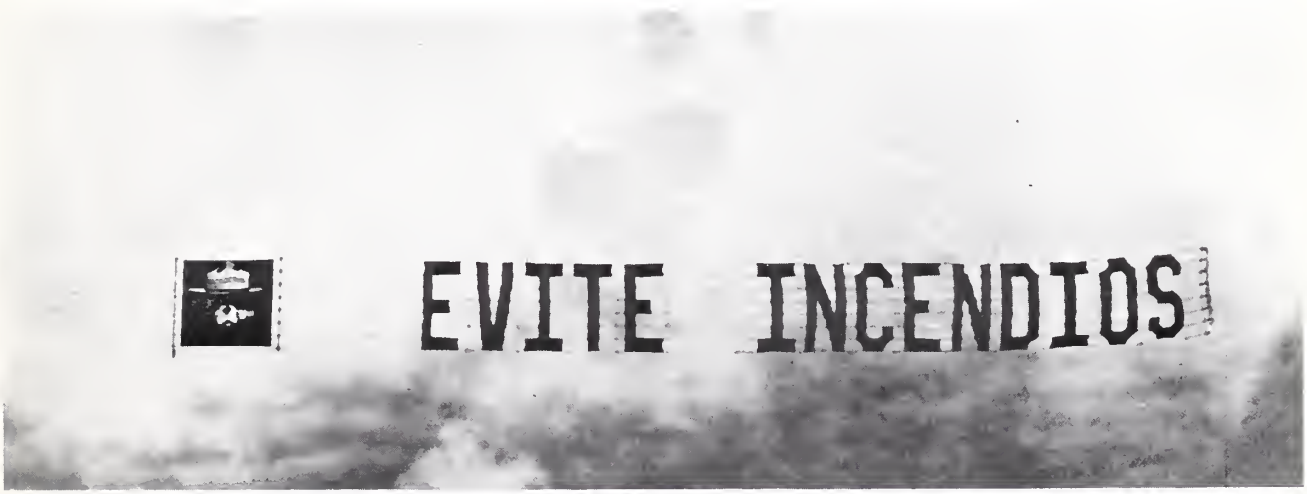
Bumper sticker—prevent forest fires.

PREVENCION DE INCENDIOS

Vehicle magnetic sign—fire prevention.

BANDERA ROJA PELIGRO DE INCENDIO

Vehicle magnetic sign—red flag warning.



Smokey Bear aerial fire prevention sign—flown over San Gabriel River (high Hispanic use) during high fire danger.

Fire Prevention in the Northeastern States: Where Do We Stand?

Linda R. Donoghue and Eugne F. McNamara

Where do wildland fire managers stand in fire prevention in the Northeastern United States? Maybe on fairly good ground in some areas, but not so well in others—at least that's what the Fire Prevention Committee, appointed at the 1977 Northeastern Forest Fire Supervisor's meeting, concluded. The Committee's objectives were to determine the status and progress of wildfire prevention in the Northeast and to develop further commitment to fire prevention in their 20-State area. With the aid of a questionnaire and the cooperation of 15 States, the Committee collected some interesting information about fire prevention in the Northeast.

Goals Developed

Based on their definition of fire prevention—"any or all activities, programs or efforts that hold, reduce, or eliminate the number and size of fire starts"—individual States developed the following fire prevention goals to achieve their major objective of reducing fire starts and acreage burned:

1. Identify major fire problems and concentrate prevention efforts where most needed.
2. Operate efficient I&E programs.
3. Increase numbers of prevention personnel.
4. Carry out or strengthen law enforcement programs.

Most of the States defined their annual targets in specific numerical terms; they measured their success by reductions in the number of fires per million acres protected, by the total number of fires and acres burned per year, or by the percent change in annual fires.

Education Program

To achieve these fire prevention goals, the responding Northeastern States implemented a variety of programs and activities designed to change the attitudes and increase the knowledge of the forest-using publics. Their fire prevention education

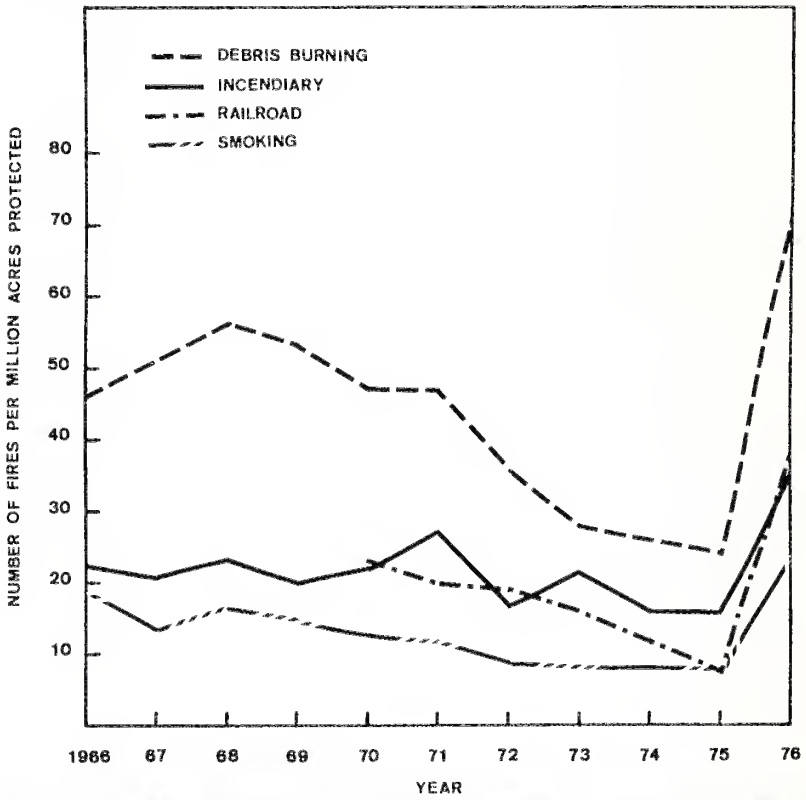


Figure 1.—Number of fires per million acres protected on State and private lands in North Central States, by the four major fire causes.

Linda R. Donoghue is a Research Forester with North Central Forest Experiment Station, U.S. Department of Agriculture Forest Service, East Lansing, Michigan.

Eugene F. McNamara is Chief Pennsylvania Division of Forest Fire Protection Department of Environmental Resources, Harrisburg, Pennsylvania.

programs included:

1. Instructing volunteer fire departments.
2. Conducting teacher workshops and community fire prevention programs.
3. Distributing fire prevention literature at schools and shopping centers.
4. Participating in fairs, parades, and other related public affairs.
5. Issuing mass media fire prevention messages.
6. Personally contacting high risk groups such as campers, seasonal residents, railroad personnel, and residents burning trash.
7. Conducting Smokey Bear programs in schools.

North Central States	Eastern States
Illinois	Connecticut
Indiana	Delaware
Iowa	Maine
Michigan	Maryland
Minnesota	Massachusetts
Missouri	New Hampshire
Ohio	New Jersey
Wisconsin	New York
	Pennsylvania
	Rhode Island
	Vermont
	Virginia

Table 1.—Stratification of Northeastern States.

Other Programs

Although nearly all the States had some form of a prevention education program, many chose to supplement these with other activities. For example, personnel in some States performed law enforcement duties, inspected spark arresters, issued burning permits, conducted spot patrols, and maintained a prescribed burning service.

As a result of advanced fire prevention training, a few States even organized Fire Prevention Action Teams and developed comprehensive, statewide action plans. Of the four traditional areas in fire prevention—education, engineering, enforcement, and environment—fire prevention education received the greatest emphasis for State fire managers.

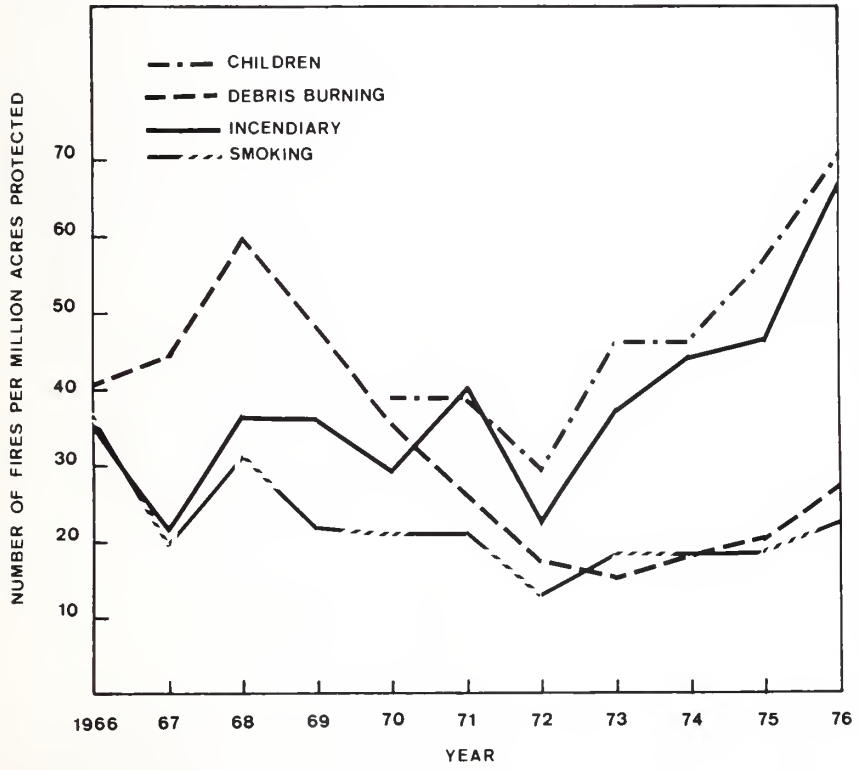


Figure 2.—Number of fires per million acres protected on State and private lands in the Eastern States, by the four major fire causes.

Results

Over the last 10 or 15 years nearly all of the States expanded their fire prevention responsibilities, either by increasing participation in existing programs or by developing new ones to meet their fire prevention goals and objectives.

Have the Northeastern States been successful in achieving their primary goal—reducing people-caused fire incidence and the acreage burned?

North Central

If we divide the Northeastern States into two groups—North Central and Eastern—different trends in fire incidence become evident (table 1). In the North Central States nearly all major fire causes decreased until 1976, a year of extreme drought (fig. 1); during 1976 nearly all of the fire prevention gains made over the past several years were negated primarily because of weather.

Continued on page 10

from page 9

Eastern States

A different trend is apparent in the Eastern States (fig. 2). While the number of fires in some cause categories decreased and others remained fairly constant from 1966-72, fire incidence has increased only slightly since then. The major exceptions, however, are children-caused and incendiary fires, which have risen dramatically since 1972 (Donoghue 1976).

Unlike the situation in the North Central States, the rise in fire occurrence in the East cannot be attributed directly to weather effects, since that part of the Nation did not generally suffer the severe drought experienced in the upper Midwest. Although there are no data to substantiate this, the increase may be due, in part, to improved fire reporting procedures used by the States.

Even though most States need more fire prevention efforts because of the recent increase in fire incidence, many are beset with inadequate funding and insufficient personnel. Currently, the States spend 4 to 60 percent of their total fire budgets for prevention (Median—15 percent). Only two States employ one or more prevention specialists full-time, although several have strong part-time staffs. New Hampshire, for instance, has 25 seasonal people working 75 percent of their time on prevention, 12 permanent people spending at least half of their time on prevention, and 2 working one-fourth of their time on prevention.

The States plan to use their limited prevention funds more efficiently, increase funds, hire full-time prevention specialists, develop better prevention programs and/or expand efforts within current programs. This not only requires support from State legislatures, but also new positions for prevention personnel, action plans, and ways of measuring progress and success.

Fire Cause Data

Moreover, States need reporting systems that provide accurate and reliable fire-cause data—the foundation of fire prevention programs. This may entail, for instance, more thorough fire-cause investigations, requiring additional time and manpower, or perhaps better methods of documenting fire-cause data. In any case, more accurate data on fire causes will provide a good base for a fire prevention program and, in the long run, contribute to success.

All in all, fire prevention has gained momentum in the Northeast, but still has a long way to go before becoming fully effective.

Literature Cited

Donoghue, Linda R.
1976. Evaluation of fire-cause statistics—a first step in preventing fires. U.S. Dep. Agric. For. Serv., Fire Manage. Notes 37(2):5, 9.

Recent Fire Publications

American Chemical Society.
1979. Preserving our visibility heritage. Amer. Chem. Soc., Environ. Sci. Tech., 13(3):266-268.

Andersen, W.H., and Jan Y. Wong.
1979. Dynamic interaction of fire retardant droplets with fuel and correlation with the rheological properties of the retardant—final report (No. 766-02). U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn., Ogden, Utah.

Barney, Richard J.
1978. Integrating fire with land management planning and action—a process. U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn. (INT-R-583), Ames Forester, p. 28-31.

Frandsen, W.H., and R.D. Sehuette.
1978. Fuel burning rates of downward versus horizontally spreading fires. U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn., Ogden, Utah. Res. Pap. INT-214, 12 p., illus.

Gehring, G.A., Jr.
1979. Laboratory studies of fire retardants corrosion—final report (No. 26-3250). U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn., Ogden, Utah.

Harrison, Ames.
1979. Help for the rural chief—part 1. U.S. Dep. Agric. For. Serv., Fire Command 46(3):28-29

Lieu, Peter J., Riek G. Kelsey, and Fred Shafizadeh.
1979. Some chemical characteristics of green and dead lodgepole

Continued on page 18

NOAA Weather Radio Used For Fire Weather Forecasts

George B. Smith and Ronald J. Strauss

A system to get current local fire information to every forest user and land manager has long been a desire of fire management personnel. With the help of the U.S. Department of Commerce's National Oceanic and Atmosperic Administration (NOAA), this dream is becoming a reality in several States. Three States—Kentucky, Florida, and Mississippi—have statewide NOAA Weather Radio coverage. Mississippi was the first State to use the system for statewide fire weather forecasts.

NOAA Weather System

The NOAA Weather System provides continuous broadcasts of the latest weather information directly from National Weather Service Offices. These broadcasts are made on one of three high-band FM frequencies—162.40, 162.475, or 162.55 megahertz (MHz). The broadcast is a taped weather message which is repeated every 4 to 6 minutes and is routinely revised every 1 to 3 hours or more frequently if needed. Most of the stations operate 24 hours daily. When current development is completed in 1979, approximately 350 stations will be on the line (fig. 1).

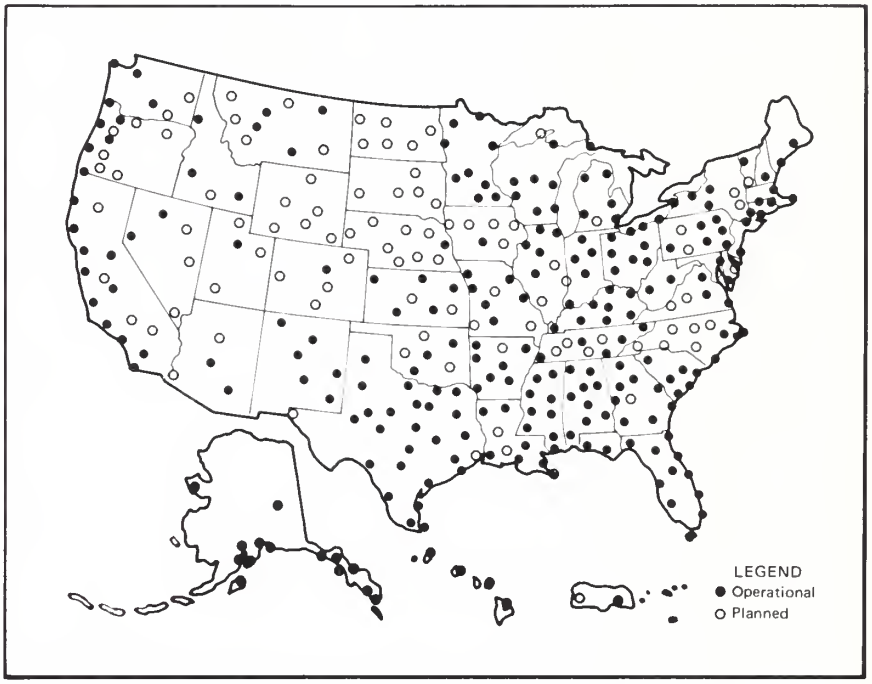


Figure 1.—Location of existing and proposed NOAA Weather Stations.

The broadcasts are tailored to the weather information needs of people within the receiving area. Receiving range is usually up to 40 miles from the broadcast antenna site. The effective range depends on many factors, particularly the height of the broadcasting antenna, terrain, quality of the receiver, and type of receiving antenna.

Special Warnings

During severe weather, National Weather Service forecasters can interrupt the routine weather broadcasts and substitute special warning messages.

The forecasters can also activate specially designed warning receivers.

Text continued on page 14

George B. Smith, formerly Special Programs Meteorologist for Forestry at the Jackson, Mississippi National Weather Forecast Office is now Lead Forecaster at the San Juan, Puerto Rico, National Weather Forecast Office.

Ronald J. Strauss, formerly Fire Management Specialist on the National Forests in Mississippi, Jackson, Miss., is now Group Leader, Program Development and Budget, Southern Regional Office, USDA Forest Service, Atlanta, Georgia.

NOAA Weather Radio Transmitters In Operation As Of December 1, 1978

The number following each city identifies the radio frequency on which the station transmits. They are:

(1) 162.550 MHZ
(2) 162.400 MHZ
(3) 162.475 MHZ

Alabama
Anniston ....(3)
Birmingham ....(1)
Dozier ....(1)
Florence ....(3)
Huntsville ....(2)
Louisville ....(3)
Mobile ....(1)
Montgomery ....(2)
Tuscaloosa ....(2)

Alaska
Anchorage ....(1)
Cordova ....(1)
Fairbanks ....(1)
Homer ....(2)
Juneau ....(1)
Ketchikan ....(1)
Kodiak ....(1)
Nome ....(1)
Petersburg ....(1)
Seward ....(1)
Sitka ....(1)
Valdez ....(1)
Wrangell ....(2)
Yakutat ....(1)

Arizona
Phoenix ....(1)
Tucson ....(2)

Arkansas
Fayetteville ....(3)
Fort Smith ....(2)
Gurdon ....(3)
Jonesboro ....(1)
Little Rock ....(1)
Star City ....(2)
Texarkana ....(1)

California
Coachella ....(2)
Crescent City, Calif.
Brookings, Oreg. ....(1)
Eureka ....(2)
Fresno ....(2)
Los Angeles ....(1)
Monterey ....(2)
Point Arena ....(2)
Sacramento ....(2)
San Diego ....(2)
San Francisco ....(1)
San Luis Obispo ....(1)
Santa Barbara ....(2)

Colorado
Denver ....(1)

Connecticut
Hartford ....(3)
Meriden ....(2)
New London ....(1)

Delaware
Lewes ....(1)

District of Columbia
Washington, D.C. ....(1)

Florida
Fort Myers ....(3)
Daytona Beach ....(2)
Gainesville ....(3)
Jacksonville ....(1)
Key West ....(2)
Melbourne ....(1)
Miami ....(1)
Orlando ....(3)
Panama City ....(1)
Pensacola ....(2)
Tallahassee ....(2)
Tampa ....(1)
West Palm Beach ....(2)

Georgia
Atlanta ....(1)
Athens ....(2)
Augusta ....(1)
Chatsworth ....(2)
Columbus ....(2)
Pelham ....(1)
Savannah ....(2)
Waycross ....(3)

Hawaii
Hilo ....(1)
Honolulu ....(1)
Kokee ....(2)
Mt. Haleakala ....(2)

Idaho
Boise ....(1)
Lewiston ....(1)
Pocatello ....(1)

Illinois
Chicago ....(1)
Moline ....(1)
Peoria ....(3)
Rockford ....(3)
Springfield ....(2)

Indiana
Evansville ....(1)
Fort Wayne ....(1)
Indianapolis ....(1)
Lafayette ....(3)
South Bend ....(2)

Iowa
Des Moines ....(1)

Kansas
Colby ....(3)
Concordia ....(1)
Dodge City ....(3)
Topeka ....(3)
Wichita ....(1)

Kentucky
Ashland ....(1)
Bowling Green ....(2)
Covington ....(1)
Hazard ....(3)
Lexington ....(2)
Louisville ....(3)
Mayfield ....(3)
Somerset ....(1)

Louisiana
Baton Rouge ....(2)
Lake Charles ....(2)
Morgan City ....(3)
New Orleans ....(1)
Monroe ....(1)
Shreveport ....(2)

Maine
Ellsworth ....(2)
Portland ....(1)

Maryland
Baltimore ....(2)
Salisbury ....(2)

Massachusetts
Boston ....(2)
Hyannis ....(1)

Michigan
Alpena (1)
Detroit (1)
Flint (2)
Grand Rapids (1)
Marquette (1)
Sauit Ste. Marie (1)
Traverse City (2)

Minnesota
Duluth (1)
Int'l. Falls (1)
Mankato (2)
Minneapolis (1)
Rochester (3)
St. Cloud (3)
Thief River Falls (1)
Willmar (2)

Mississippi
Ackerman (3)
Booneville (1)
Bude (1)
Gulfport (2)
Inverness (1)
Jackson (2)
McHenry (3)
Meridian (1)
Oxford (2)

Missouri
Camdenton (1)
Hannibal (3)
Kansas City (1)
St Joseph (2)
St. Louis (1)
Springfield (2)

Montana
Billings (1)
Glasgow (1)
Great Falls (1)
Helena (2)

Nebraska
Omaha (2)

Nevada
Reno (1)
Winnemucca (2)

New Hampshire
Concord (3)

New Jersey
Atlantic City (2)

New Mexico
Albuquerque (2)
Clovis (3)
Farmington (3)
Hobbs (2)
Ruidoso (1)
Santa Fe (1)

New York
Binghamton (3)
Buffalo (1)
New York City (1)
Rochester (2)
Syracuse (1)

North Carolina
Cape Hatteras (1)
New Bern (2)
Wilmington (1)

North Dakota
Fargo (3)

Ohio
Akron (2)
Caldwell (3)
Cleveland (1)
Columbus (1)
Dayton (3)
Lima (2)
Sandusky (2)
Toledo (1)

Oklahoma
Lawton (1)
Oklahoma City (2)
Tulsa (1)

Oregon
Astoria (2)
Coos Bay (2)
Eugene (2)
Newport (1)
Portland (1)

Pennsylvania
Allentown (2)
Erie (2)
Harrisburg (1)
Philadelphia (3)
Pittsburgh (1)
Wilkes-Barre (1)
Willamsport (2)

Puerto Rico
San Juan (2)

Rhode Island
Providence (2)

South Carolina
Beaufort (3)
Charleston (1)
Columbia (2)
Florence (1)
Greenville (1)
Myrtle Beach (2)

Tennessee
Bristol (1)
Chattanooga (1)
Knoxville (3)
Memphis (3)
Nashville (1)

Texas
Abilene (2)
Amarilla (1)
Austin (2)
Big Spring (3)
Borwnsville (1)
Bryan (1)
Corpus Christi (1)
Dallas (2)
Del Rio (2)
Fort Worth (1)
Galveston (1)
Houston (2)
Laredo (3)
Lubbock (2)
Lufkin (1)
Midland (2)
Paris (1)
Pharr (2)
San Antonio (1)
Victoria (2)
Wichita Falls (3)
San Angelo (1)
Sherman (3)
Tyler (3)
Waco (3)

Utah
Salt Lake City (1)

Vermont
Burlington (2)

Virginia
Norfolk (1)
Richmond (3)

Washington
Neah Bay (1)
Seattle (1)
Yakima (1)

West Virginia
Charleston (2)
Clarksburg (1)

Wisconsin
Green Bay (1)
LaCrosse (1)
Madison (1)
Menomonie (2)
Milwaukee (2)
Wausau (3)

text from page 11

Such receivers either sound an alarm indicating an emergency exists, alerting the listener to turn the receiver up to an audible volume; or, when operated in a muted mode, are automatically turned on so the warning message is heard.

Under a January 1975, White House policy statement, NOAA Weather Radio was designated the sole Government-operated radio system to provide direct warnings into private homes for both natural disasters and nuclear attacks.

Receivers

Many types of receivers are available. They cost from $10 to $15 for small pocket receivers—without the automatic storm-warning features—to $75 for battery/electric receivers with automatic storm warning. Receivers are available at most radio specialty shops and other retail outlets. It is hoped that some time in the future these high FM bands will be added to most car radios.

Mississippi Example

Mississippi was one of the first States to broadcast regular 24-hour daily weather information statewide on the NOAA weather radio frequency (fig. 2). This State is also the first to use the NOAA weather radio system for statewide *fire weather forecasts*. The National Weather Service in cooperation with the Mississippi Forestry Commission and the National Forests in Mississippi began these forecasts at the begining of the 1977 fall fire season.

Previous System

Previously, the Mississippi Forestry Commission had called the National Weather Service office at Jackson to get the daily fire weather forecast. The forecast was then relayed by two-way radio to Commission offices throughout the State. The Weather Service sent the forecast to the National Forest Supervisor's office by telecopier each day. Forecast information was then relayed by telephone to the 10 Ranger Districts, because they are too widely separated for effective two-way radio contaet. Other Government agencies, forest industries, and interested individuals around the State had to contaet one of the Forestry Commission or Forest Service offices for daily fire weather forecasts.

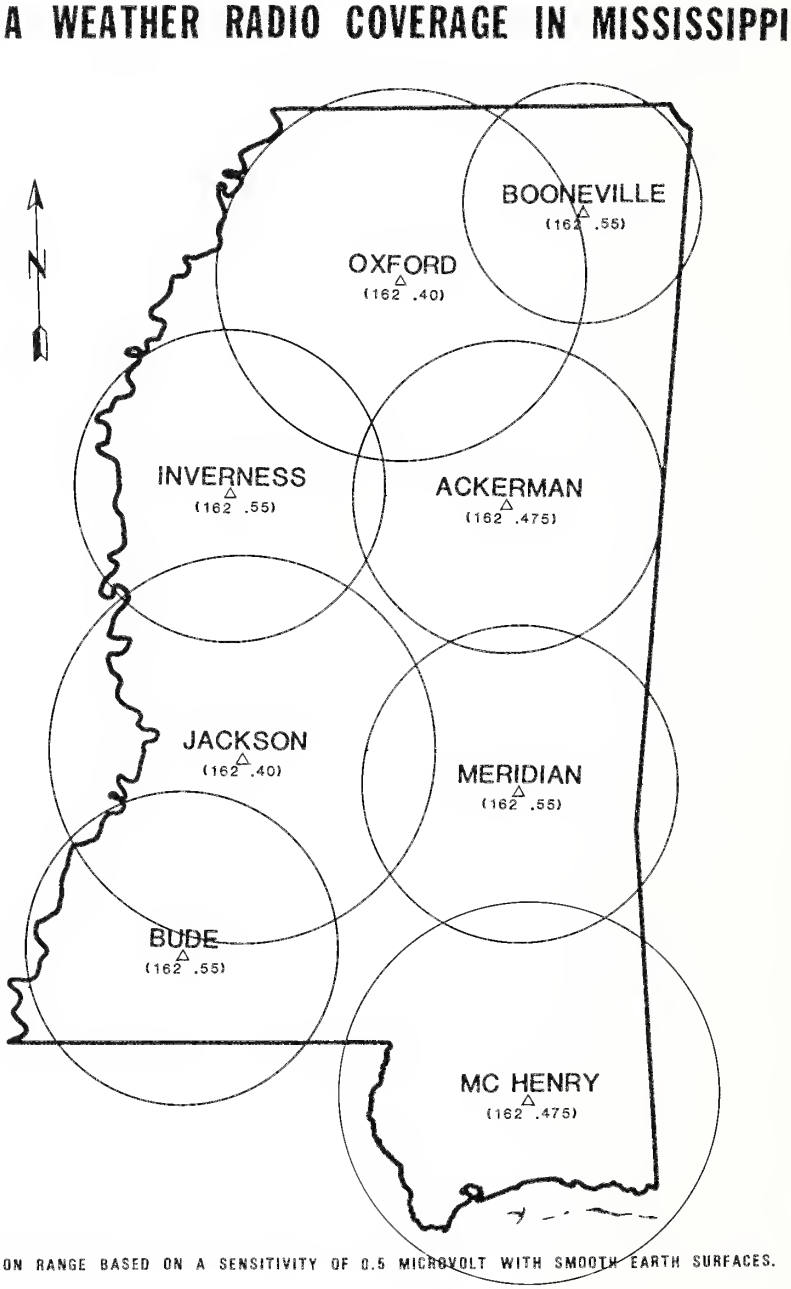


Figure 2.—NOAA Weather Radio coverage in Mississippi.

New System

The new system makes fire weather forecast information immediately available to all users without an elaborate or cumbersome distribution network (fig. 3).

Fire weather forecasts are aired daily along with regular NOAA weather information on one of the regular National Weather Service weather radio frequencies. With a suitable receiver the field user and general public can now get fire weather forecast information in the office, at home, or even in the field. He can also keep up with current forecast information, including severe weather alerts.

Future

In 1979, upon completion of the currently planned network, approximately 90 percent of the United States population will be within range of a NOAA weather system broadcast. Many States are entering into cooperative agreements for use of facilities to aid full State coverage.

Potential exists for wildland fire agencies to use and increase the flow of weather information to fire and land managers. Through increasing use of NOAA weather system broadcasts, the general public will develop a better knowledge of fire conditions. This increased knowledge should result in greater care being taken with fire on our wildlands.

References

Consumers Union.
1978. Weather Radios. Natl. Weather Serv., Consum. Rep. 43(8):459-461.

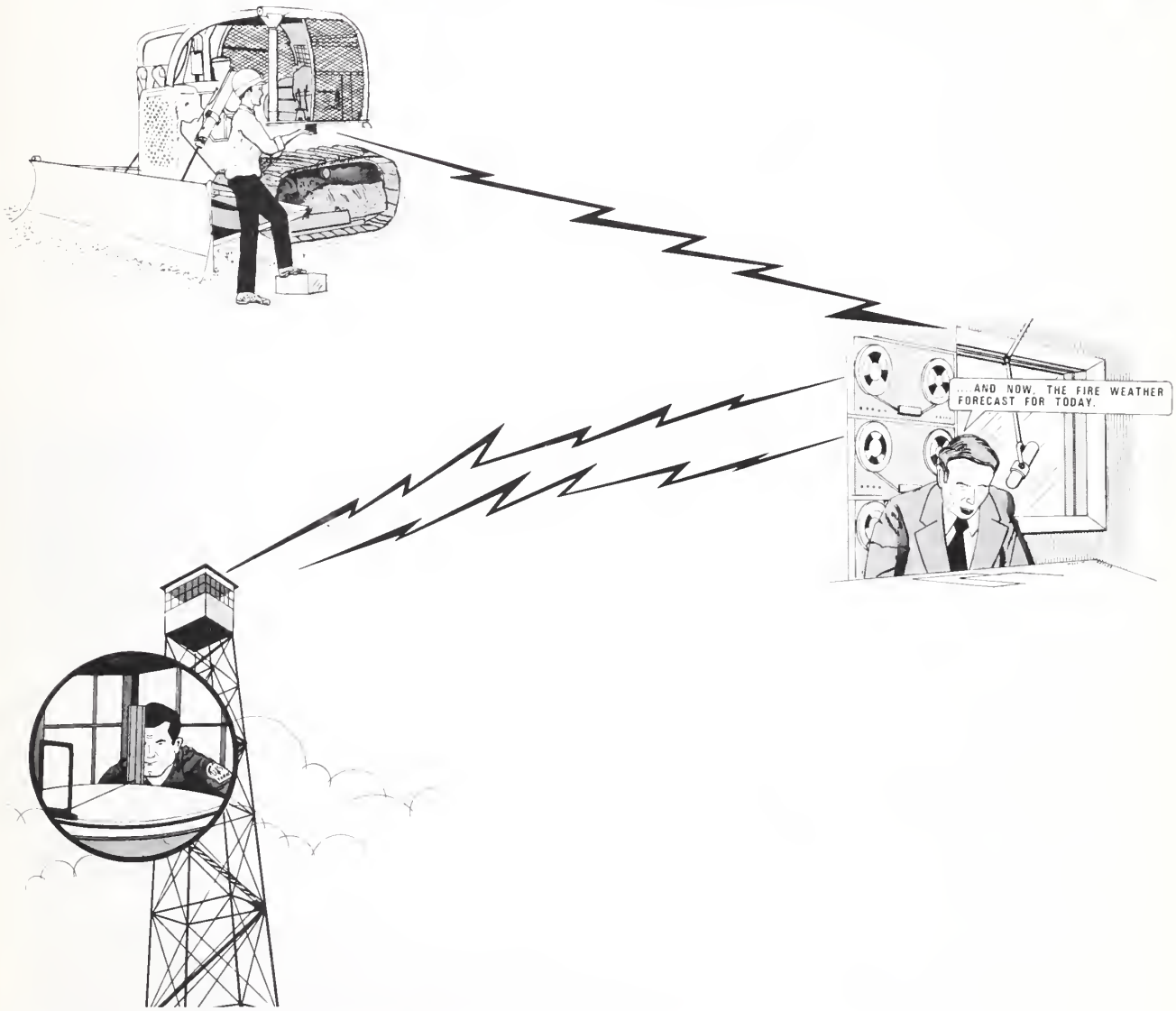


Figure 3.—Direct transmission of fire weather information to the user.

Rural Fire Prevention and Control—A Time of Awakening

R. Michael Bowman

During the last 15 years, a major socioeconomic change has taken place in the United States. City dwellers, attracted by country living, have migrated to the rural areas of our country. Permanent vacation dwellings have been built in many parts of the 2.2 million acres that constitute rural America, and 42 percent of the Nation's population now call these areas home. This population increase adds a striking new dimension to an already complex fire problem.

The destruction caused by fires during the history of America is well documented. This historical destruction has played a major role in molding the wildland and structural fire services we have today.

A famous philosopher once said, "Those who ignore history are doomed to relive it." However, history and the traditions which are derived from it do at times restrict our creativity in dealing with evolving situations. This philosophy is particularly true in rural areas, sometimes referred to as "Forgotten America."

In many cases, we do not or cannot express in modern analytical terms the frustration of seeing lives lost and/or property destroyed because of ineffective fire protection.

The Presidential report, "America Burning," and the USDA Forest Service report, "Rural Fire Protection," point out the critical lack of statistical data that are necessary to properly define the rural fire problem. However, in the face of severe inflationary trends and a Congress that is attempting to respond to the outcry of government inefficiency at all levels by developing well defined programs that will solve the country's problems in a specified time, the fire services still rely on emotionally based justification for developing fire protection in rural communities.

In order to fulfill our professional responsibilities in rural fire prevention and control, we must quit procrastinating and begin developing well defined programs based on analytical data.

In order to do this we need to take

R. Michael Bowman served as Assistant Director, Cooperative Fire Protection Staff Group, USDA-Forest Service, Washington, DC, with responsibility for the Rural Community Fire Protection Program until January 1979. He is currently Assistant Director, Aviation and Fire Management, USDA-Forest Service, Northern Region, Missoula, Montana.

a look at the broad functional areas of organizing, preventing, training, and equipment.

Organizing

Historically, rural communities have been following the urban philosophy of fire protection. Attempts have been made to develop fire stations (attack units) in a well-distributed pattern to meet required response times. Based on the values-at-risk and capital investment standpoints, most rural communities cannot afford "a fire station on every corner." It thus becomes imperative to develop community/county plans that are well thought out early in the organizational phase. These plans must reflect the historical fire occurrence, the projected development of the area, and well-defined goals and objectives to meet the communities' fire protection needs.

Two major efforts are currently under way to assist local jurisdictions in developing planning processes. The U.S. Fire Administration has published "The Basic Guide for Rural Fire Planning," which is a comprehensive handbook for local administrators and fire chiefs in developing community fire plans. The various State Forestry organizations in cooperation with the USDA Forest Service have developed guidelines and are providing technical assistance to rural areas for the development of integrated rural structural-wildland fire plans.

Currently 50 percent of the States are in various stages of developing comprehensive rural county/community fire plans. However, with a nationwide potential of 46,168 fire departments in communities of less than 10,000 population, we all must do our utmost to accelerate planning in order to provide realistic and economic fire protection to these areas.

Prevention

Data collected during the pilot Rural Community Fire Protection program conducted by the USDA Forest Service from 1975 to 1977 indicated that fire prevention programs are of extremely low priority or are nonexistent in rural areas.

Considering the recent rapid residential and commercial growth in these areas, the scarcity of volunteer and paid fire service personnel, and the skyrocketing cost of facilities and equipment, effective fire prevention programs are becoming a necessity rather than a "do it when you have time" function.

Granted, this change will be as traumatic as moving a cemetery because most fire service personnel were attracted to the profession by the excitement of the suppression activity. Also, conventional fire prevention strategies bear close scrutiny. Current thrusts in land use planning referred to as "plan unit development" where fire prevention and suppression requirements are basic socioeconomic and environmental considerations of community development plans may be an effective replacement for codes and zoning restrictions. Although codes and zoning criteria have been the mainstay of the urban fire services, the resource-scarce rural areas enforcement of such regulations will be very difficult in the foreseeable future.

Other traditional prevention tools of the trade also need to be reviewed and adapted to the rural scene. New technology in residential sprinkler systems, smoke detection devices, and interior/exterior flame-resistant codings all hold promise for reducing the impact of fire on resources of the nonurban communities. The key to effective fire protection through fire prevention is an evaluation method which will allow administrators to reliably forecast the number of fires prevented based on a mix of fire prevention strategies in education, enforcement, and engineering. To date, such a technique has been allusive and is not currently available. The fact still remains that the majority of the fire prevention complacency has its roots in fire service tradition and can be overcome with aggressive, creative leadership.

Training

State fire academies and State forestry organizations currently are doing a tremendous job of providing training for rural firefighters. However, the question is, are the right people getting the right training? Estimates indicate that 200,000 volunteer firefighters need training annually. The sheer magnitude of the training problem is overwhelming! Therefore, our whole rural fire service educational system needs to be redesigned to accommodate the rural structural/wildland fires skill and knowledge requirements. For example, there is a tremendous duplication of effort on a State-by-State basis in the development of training materials and/or the purchase of commercial training courses designed for urban fire training.

In order to make best use of the training dollar, a model curriculum must be developed, based on a realistic evaluation of the tasks that rural firefighters are expected to perform. Once the curriculum is difined, course materials should be developed that are easily adaptable to the local situation and that meet the requirements of the task analysis.

The lack of effective training is currently jeopardizing the safety of fire service personnel and the lives and property they are protecting.

However, present instructional materials do not lend themselves to the rural fire training problem. Limited volunteer time, dispersed student population, and the variety in training needs are all challenges. Well-designed interagency mobile training programs and a nationwide network of educatonal TV appear to be the most promising vehicles for training the volunteer firefighter.

Equipment

Rapid effective initial response will always be a requirement of fire protection. Therefore, equipment and the training to use the equipment go hand in hand when a community is developing a fire protection program. Approximately 80 percent of the 20,000 organized volunteer fire departments in the Nation are not properly equipped. The State forestry organizations are providing Federal excess military equipment to rural fire departments under the Forest Service Rural Fire Prevention and Control program. This program is providing extremely economical equipment to departments which otherwise could not afford apparatus. However, availability of Federal excess property is limited and is only a temporary solution to the basic problem. The need for an economical all-purpose initial attack unit is critical. The design of such a piece of equipment is not difficult and can be easily accomplished in cooperation with industry. Tradition and provincialism do present barriers to any approach to standardization. The accelerating cost of fire equipment will soon demand that we sacrifice a few personal preferences to achieve Statewide design standards in purchasing programs in order to capitalize on volume purchases.

Summary

In summary, the fire eommunity is starting to react to the long-ignored rural fire problem. Can we meet the challenge? The United States can no longer afford to waste the human and natural resources of the rural communities. Let's move ahead in the spirit of teamwork, cooperation, and dedication which has long been the hallmark of the fire service.

RECENT FIRE PUBLICATIONS

from page 10

and western white pine. U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn., Res. Note INT-253, 8 p.

National Fire Protection Assoeiation.
1978. Wildfire control by volunteer fire departments. Natl. Fire Prot. Assoc. Boston, Mass.,

Noble, Delpha.
1978. Fire RD&A Program: research—land management link. U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn. (INT-R-583), Ames For., p. 28-31.

Pong, W. Y., and J. W. Henley.
1978. Characteristics of residues in a helicopter logged area of old-growth douglas-fir. U.S. Dep. Agric. For. Serv., Pac. Northwest For. and Range Exp. Stn., Portland, Oreg. Res. Note PNW-320, 33 p.

Swanson, D. H., and A.D. Luedecke.
1979. Tank design guide for fire retardant aircraft—final report (No. 26-3425). U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn., Ogden, Utah.

Taylor, Alan R.
1978. Transferring fire-related information to resource managers and the public: FIREBASE. Proc. Environ. Consequences of Fire and Fuel Manage. in Mediterranean Ecosystems, Palo Alto, Calif., Aug. 1-5, 1977. U.S. Dep. Agric. For. Serv., Intermt. For. and Range Exp. Stn. (INT-R-582), p. 215-219.

Van Gelder, Randall J.
1978. FIREMANS—a fire management system simulation model for operational fire planning support. *In* Proc. Workshop/Symp. Simulation Techniques in Forest Operational Planning and Control (Wageningen, The Netherlands, Oct. 3-6, 1978), p. 188-194.

Wright, Henry A.
1978. The effect of fire on vegetation in ponderosa pine forests, a state-of-the-art review. Texas Tech. Univ., Dep. Range Wildl. Manage. Info. Series No. 2, College of Agric. Sci. Publ. No. T-9-199. Lubbock, Texas.

U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C. 20250

OFFICIAL BUSINESS

POSTAGE
& FEES PAID
U.S. DEPT.
OF
AGRICULTURE
AGR 101

U.S. MAIL

Third Class